SAMTRON 76E/76V/56B

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Safety Instructions

Please read the following safety instructions as they are designed to prevent damage to property and harm to the user.

Warning / Caution

Failure to follow directions noted by this symbol could result in bodily harm or damage to equipment.

Notational Conventions

Prohibited

Important to read and understand at all times

Do not disassemble

Disconnect the plug from the outlet

Do not touch

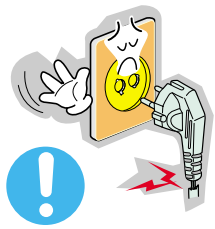
Grounding to prevent an electric shock

Safety Instructions

Power

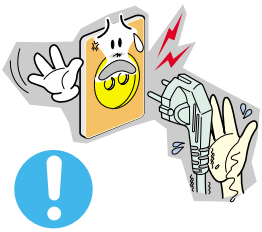
When not used for extended periods of time, set your PC to DPMS. If using a screen saver, set it to the active screen mode.

If the size of your monitor is small, or if the same image is present for long periods of time, you may see afterimages due to damage to the flourescent substance on the inside of the CDT.



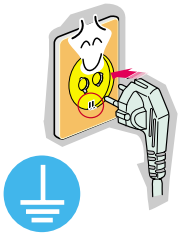
● Do not use a damaged or loose plug.

◆ This may cause an electric shock or fire.



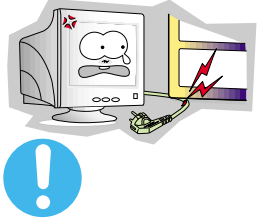
● Do not pull the plug out by the wire nor touch the plug with wet hands.

◆ This may cause an electric shock or fire.



● Use only a properly grounded plug and recepticle.

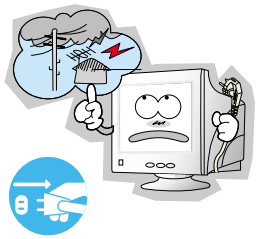
◆ An improper ground may cause electric shock or equipment damage.



● Do not excessively bend the plug and wire nor place heavy objects upon them, which could cause damage.

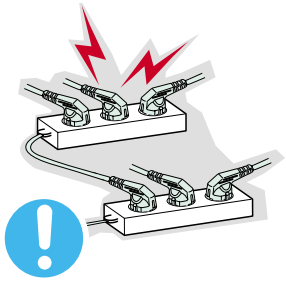
◆ Failure to do so may cause an electric shock or fire.

Safety Instructions



● Disconnect the plug from the outlet during storms or lightening or if it is not used for a long period of time.

◆ Failure to do so may cause an electric shock or fire.



● Do not connect too many extension cords or plugs to an outlet.

◆ This may cause a fire.

Safety Instructions

Installation

● Do not cover the vents on the monitor cabinet.

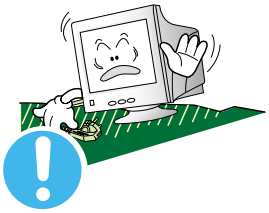
◆ Bad ventilation may cause a breakdown or fire.

● Put your monitor in a location with low humidity and a minimum of dust.

◆ An electric short or fire could result inside the monitor.

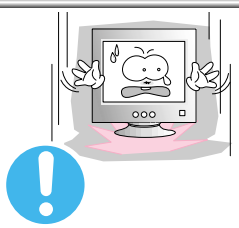
● Do not drop the monitor when moving it.

◆ This may cause damage to the product or human body.



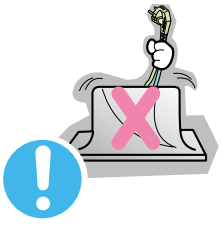
● Place the monitor on a flat and stable surface.

◆ The monitor can cause injury by falling.



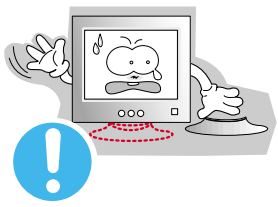
● Set down the monitor carefully.

◆ It could be damaged or broken.



● Do not place the monitor face down on the screen.

◆ The CRT surface may be damaged.



● Do not use the monitor without the monitor stand.

◆ It could break down or cause a fire due to bad ventilation.
◆ If the monitor must be used without the supplied stand, take steps to insure proper ventilation.

Safety Instructions

Cleaning

When cleaning the monitor case or the surface of the CRT, wipe with a slightly moistened, soft fabric.
Do not clean Flat monitor with water. Use a water-diluted mild detergent.

(Some detergents contain significant amounts of alcohol-based solvents, which can damage (color change) or crack the monitor case. The antiglare/anti-static surface coating on the CDT may also be affected.)

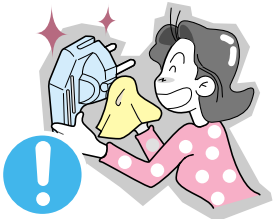
Dilute the detergent (1:10 ratio) with water before using.

● Do not spray detergent directly on the monitor.

● Use the recommended detergent with a smooth cloth.

◆ You can prevent the coated CRT from being damaged or the monitor cabinet from being dissolved, cracked or discolored.
◆ You can buy a recommended detergent at Service Center.

Caution: Use a recommended detergent only, as other surfactants containing large amounts of alcohol, solvent or other strong substances, can discolor or crack the monitor or damage the coated CDT



● If the connector between the plug and the pin is dusty or dirty, clean it properly with a dry cloth.

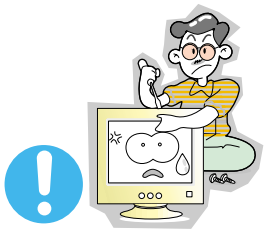
◆ A dirty connector can cause an electric shock or fire.

● Do not set a glass of water, chemicals or any small metal objects on the monitor.

◆ This may cause damage, electric shock or a fire.
◆ If a foreign substance gets into the monitor, disconnect the plug and then contact a service center.

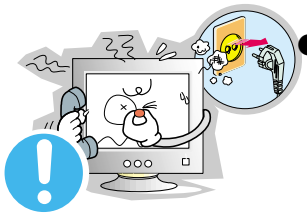
Safety Instructions

Other



● Do not remove cover(or back). No user serviceable parts inside.

◆ This may cause an electric shock or a fire.
◆ Refer servicing to qualified service personnel.

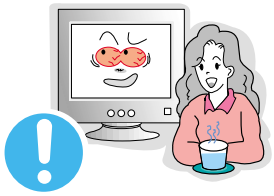


● If your monitor does not operate normally - in particular,if there are any unusual sounds or smells coming from it - unplug it immediately and contact an authorized dealer or service.

◆ This may cause an electric shock or a fire.

● Do not place any heavy objects on the monitor.

◆ This may cause an electric shock or a fire.

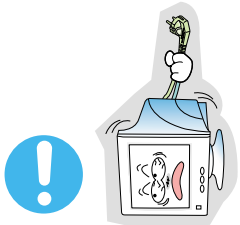


● For each hour of looking at the monitor, you should let your eyes rest for 5 minutes.

◆ This will reduce eye fatigue.

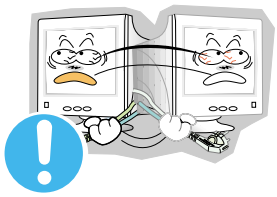
● Do not use or store inflammable substances near the monitor.

◆ This may cause an explosion or fire.



● Do not try to move the monitor by pulling on the wire or the signal cable.

◆ This may cause a breakdown, electric shock or a fire due to damage to the cable.

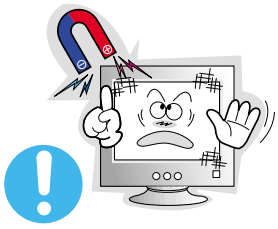


● Do not move the monitor right or left by pulling only the wire or the signal cable.

◆ This may cause a breakdown, electric shock or a fire due to damage to the cable.

● Never insert anything metallic into the monitor openings.

◆ This may cause an electric shock, fire or injury.



● Keep the monitor away from any magnetic substances..

◆ This may cause discoloring or distortion of the image.

Introduction

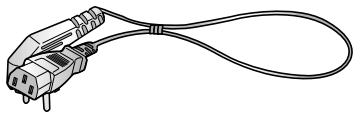
Unpacking

■ Monitor and Stand

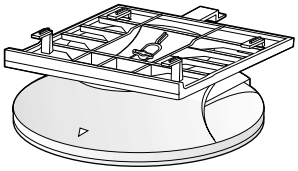
(Your monitor is shipped with the base detached.)

Please make sure the following items are included with your monitor. If any items are missing, contact your dealer.

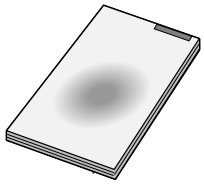
■ Power Cord



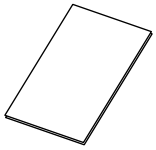
■ Stand



■ Quick Setup Guide



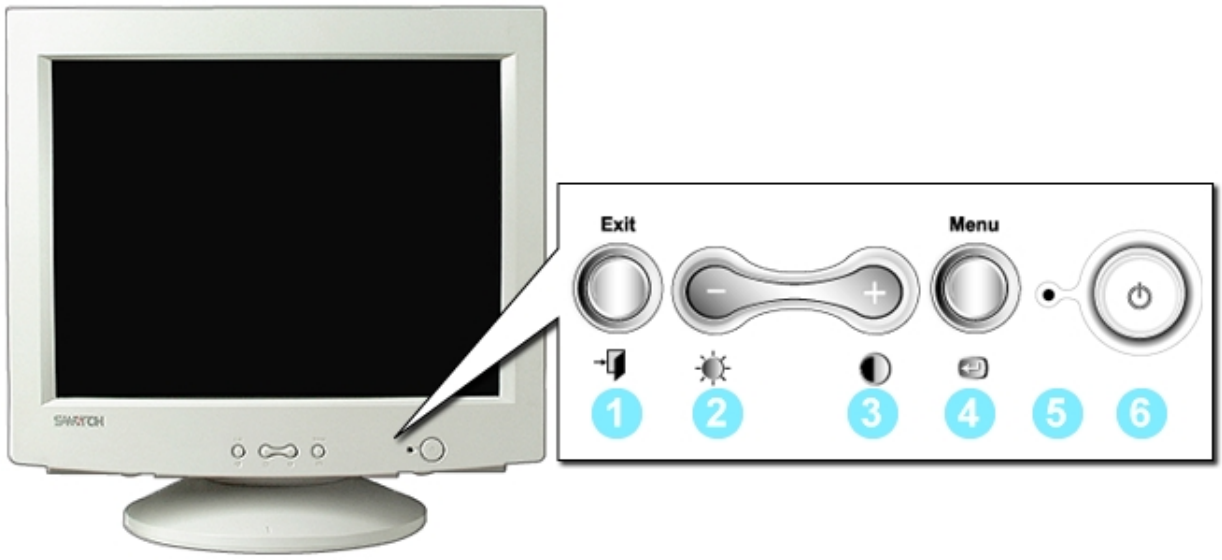
■ Warranty card (Not available in all locations)



■ User's Guide and Driver Installation CD

Introduction

Front



1. Exit button : Use this button to Exit the active menu or the OSD.
2,3. Adjust buttons : These buttons allow you to highlight and adjust items in the menu.
4. Menu button : Use this button to open the OSD and activate a highlighted menu item.
5. Power indicator : Indicates normal or Power Saving Mode.
6. Power button : Use this button to turn the monitor on and off.

Note: See PowerSaver described in the manual for further information regarding power saving functions.
For energy conversation,turn your monitor OFF when it is not needed,or when leaving it unattended for long periods.

Introduction

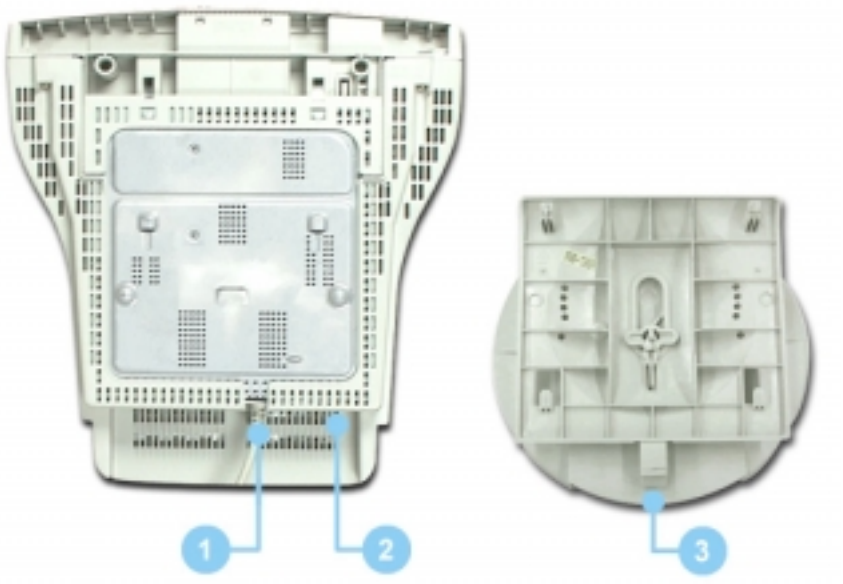
Rear

(The configuration at the back of the moniter may vary from product to product.)

1. Power port : Connect the power cord for your monitor to the power port on the back of the monitor.
2. Signal cable : Connect the end of the signal cable to your computer's video port (video board,video card or graphics card).

Note: See Connecting Your Monitor for further information regarding cable connections.

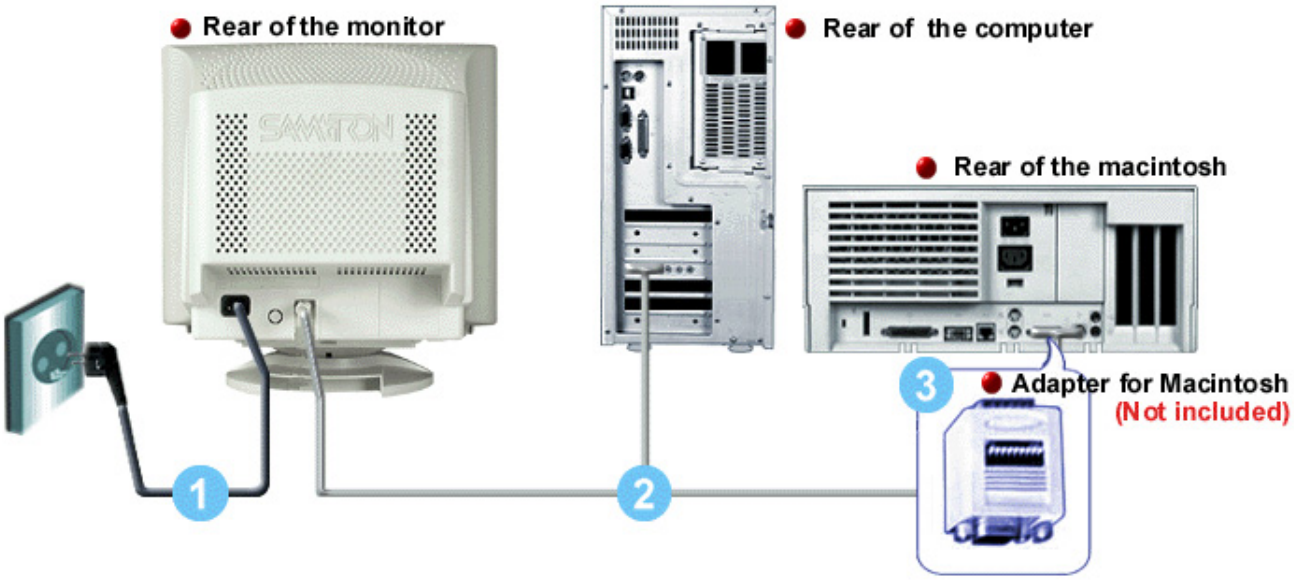
Bottom



1. Signal cable : Connect the end of the signal cable to your computer's video port(video board, video card or graphics card).
2. Power port : Connect the power cord for your monitor to the power port on the back of the monitor.
3. Tilt/Swivel Base : You can separate the base from the monitor.

Setup

Connecting Your Monitor



1.Connect the power cord for your monitor to the power port on the back of the monitor.
Plug the power cord for the monitor into a nearby outlet.

2.Connect the end of the signal cable to your computer's video port(video board, video card or graphics card).

3.If you are using a Macintosh computer, connect the cable to a Macintosh adapter, and set the pins on your adapter(Adapter not included). A PC-compatible computer does not need an adapter.

Note: Turn on your computer and monitor. If your monitor displays an image, installation is complete.

Setup

Installing the Video Driver

Automatic | Manual

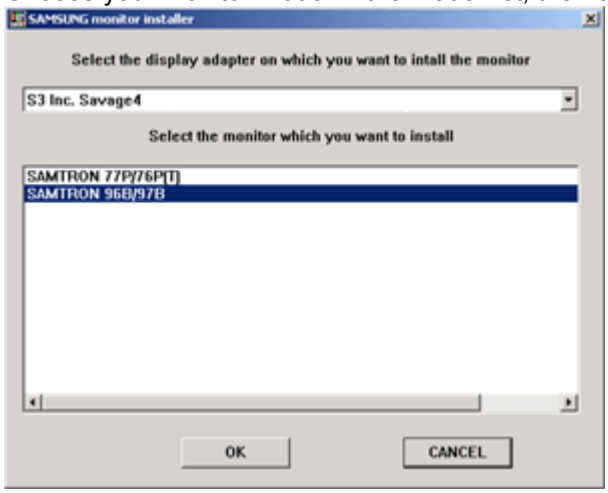
Note **When prompted by the operating system for the monitor driver, insert the CD-ROM included with this monitor. Driver installation is slightly different from one operating sys tem to another. Follow the directions as appropriate for the operating system you have.**

Prepare a blank disk and download the driver program file at the Internet web site shown here.

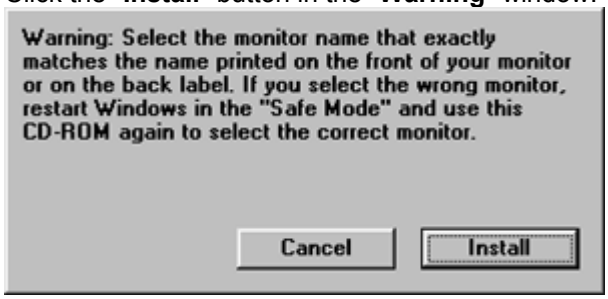
● Internet web site : http://www.samtron.com/

Windows ME/98/95

1. Insert CD into the CD-ROM driver.
2. Click "**Windows ME/98/95 Driver**".
3. Choose your monitor model in the model list, then click the "**OK**" button.


SAMSUNG monitor installer
Select the display adapter on which you want to intall the monitor
S3 Inc. Savage4
Select the monitor which you want to install
SAMTRON 77P/76P[T]
SAMTRON 96B/97B
OK
CANCEL

4. Click the "**Install**" button in the "**Warning**" window.


Warning: Select the monitor name that exactly matches the name printed on the front of your monitor or on the back label. If you select the wrong monitor, restart Windows in the "Safe Mode" and use this CD-ROM again to select the correct monitor.
Cancel
Install

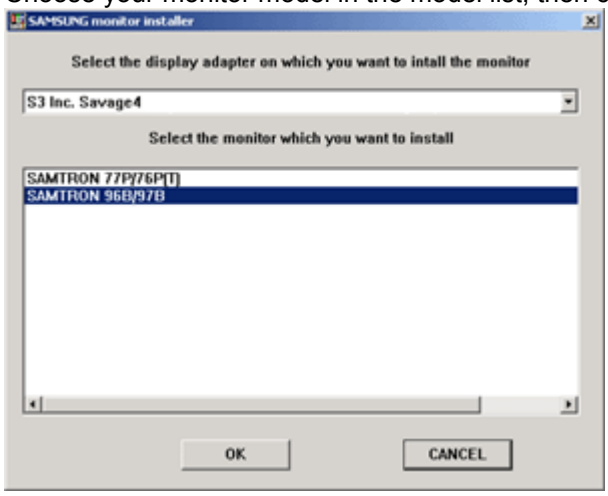
5. Monitor Driver installation is completed.

Setup

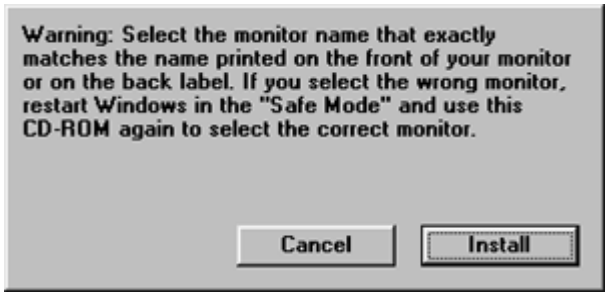
Installing the Video Driver

Windows XP/2000

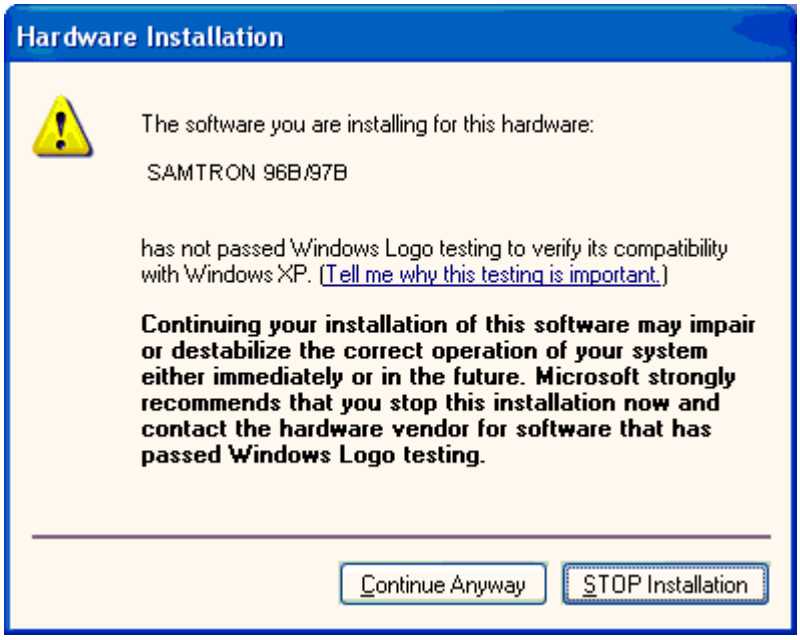
1. Insert CD into the CD-ROM driver.
2. Click "**Windows XP/2000 Driver**".
3. Choose your monitor model in the model list, then click the "**OK**" button.


SAMSUNG monitor installer
Select the display adapter on which you want to intall the monitor
S3 Inc. Savage4
Select the monitor which you want to install
SAMTRON 77P/76P(T)
SAMTRON 96B/97B
OK
CANCEL

4. Click the "**Install**" button in the "**Warning**" window.


Warning: Select the monitor name that exactly matches the name printed on the front of your monitor or on the back label. If you select the wrong monitor, restart Windows in the "Safe Mode" and use this CD-ROM again to select the correct monitor.
Cancel
Install

5. If you can see following "**Message**" window, then click the "**Continue Anyway**" button. Then click "**OK**" button.


Hardware Installation
The software you are installing for this hardware:
SAMTRON 96B/97B
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

Setup

Installing the Video Driver

This monitor driver is under certifying MS logo, and this installation don't damage your system. The certifide driver will be posted on Samtron Monitor Homepage.
http://www.samtron.com/

6. Monitor Driver installation is completed.

Setup

Installing the Video Driver

Automatic | Manual

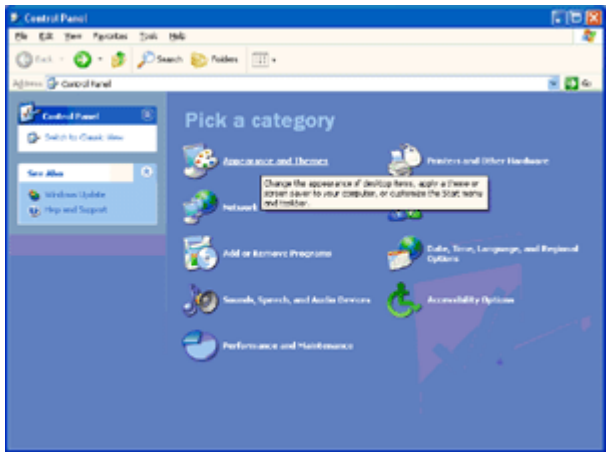
Note **When prompted by the operating system for the monitor driver, insert the CD-ROM included with this monitor. Driver installation is slightly different from one operating sys tem to another. Follow the directions as appropriate for the operating system you have.**

Prepare a blank disk and download the driver program file at the Internet web site shown here.

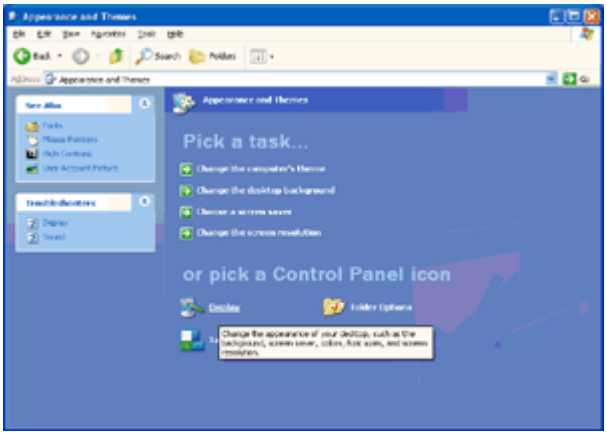
● Internet web site : http://www.samtron.com/

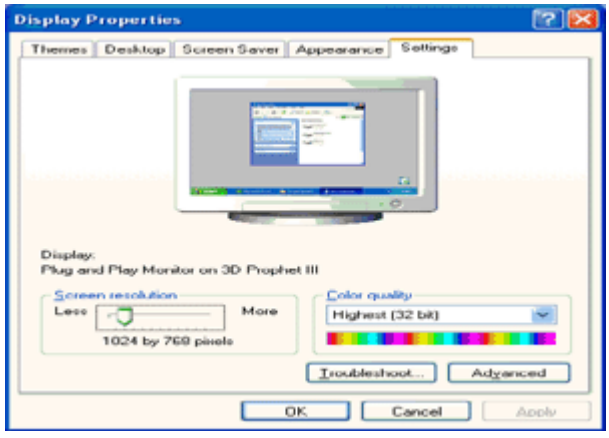
Microsoft® Windows® XP Operating System

1. Insert CD into the CD-ROM driver.
2. Click "**Start**" —> "**Control Panel**" then click the "**Appearance and Themes**" Icon.



3. Click "**Display**" icon and choose the "**Settings**" tab then click "**Advanced..**".

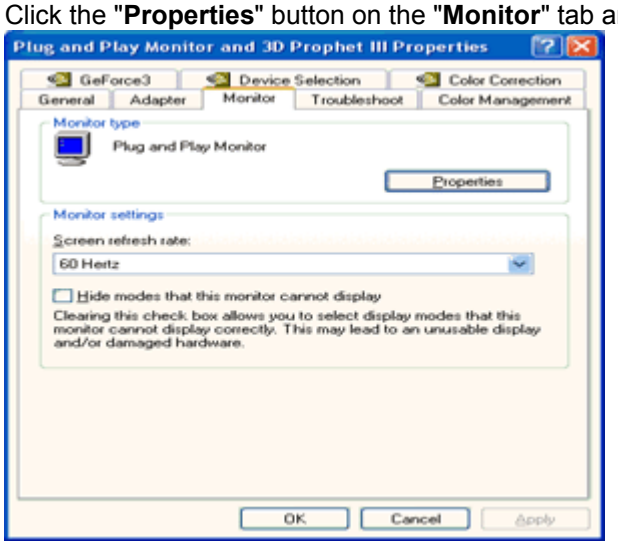


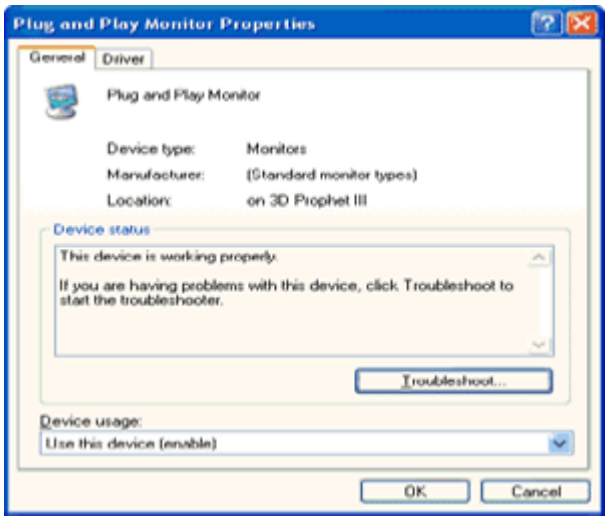


Setup

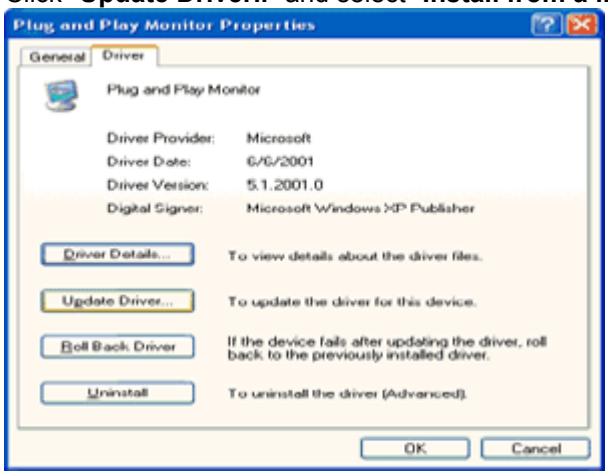
Installing the Video Driver

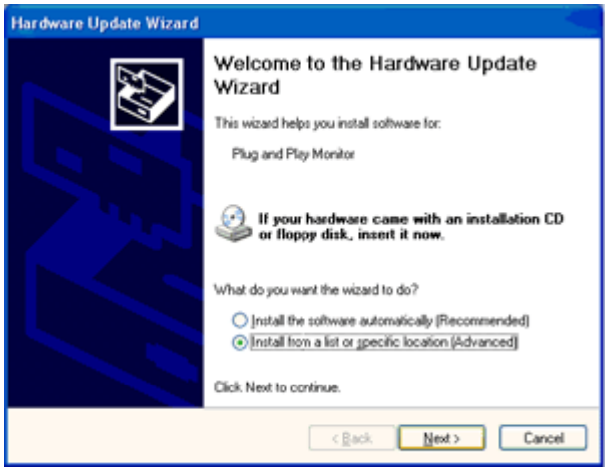
4. Click the "**Properties**" button on the "**Monitor**" tab and select "**Driver**" tab.



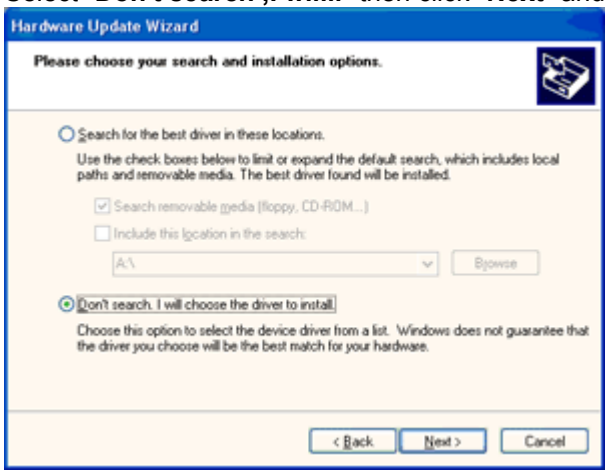


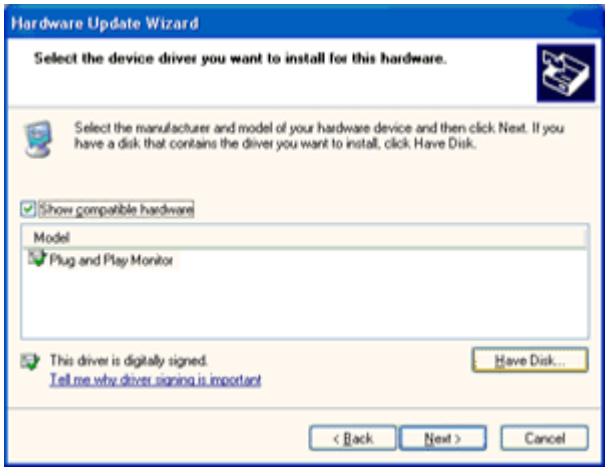
5. Click "**Update Driver..**" and select "**Install from a list or..**" then click "**Next**" button.




Hardware Update Wizard
Welcome to the Hardware Update Wizard
This wizard helps you install software for:
Plug and Play Monitor
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

6. Select "**Don't search ,I will..**" then click "**Next**" and then click "**Have disk**".

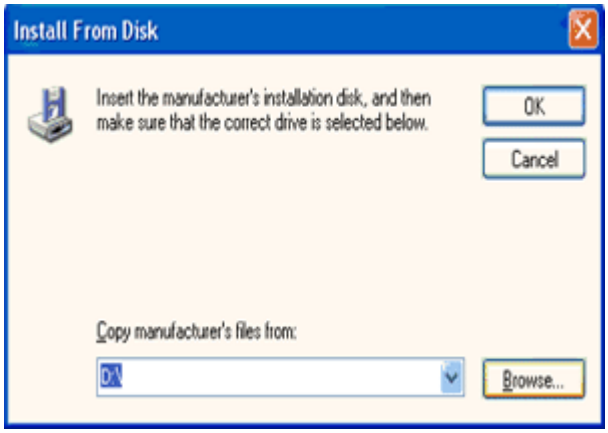

Hardware Update Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM...)
Include this location in the search:
A:\
Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< Back
Next >
Cancel

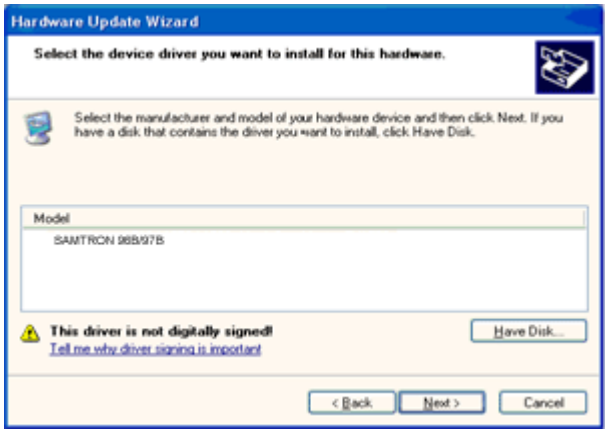

Hardware Update Wizard
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Show compatible hardware
Model
Plug and Play Monitor
This driver is digitally signed.
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel

Setup

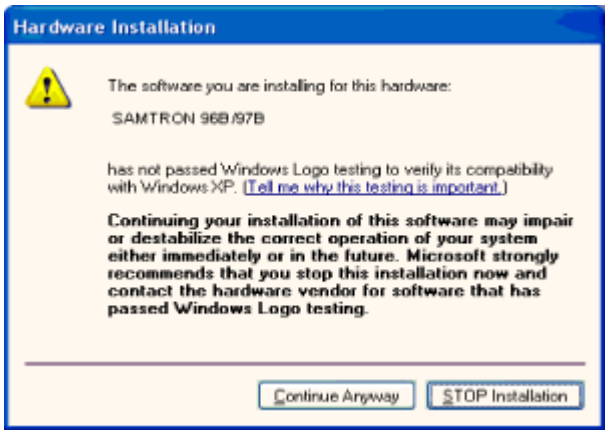
Installing the Video Driver

7. Click the "**Browse**" button then choose A:(D:\Driver) and choose your monitor model in the model list and click the "**Next**" button.




Hardware Update Wizard
Select the device driver you want to install for this hardware.
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Model
SAMTRON 96B/97B
This driver is not digitally signed!
Tell me why driver signing is important
Have Disk...
< Back
Next >
Cancel

8. If you can see following "**Message**" window, then click the "**Continue Anyway**" button. Then click "**OK**" button.

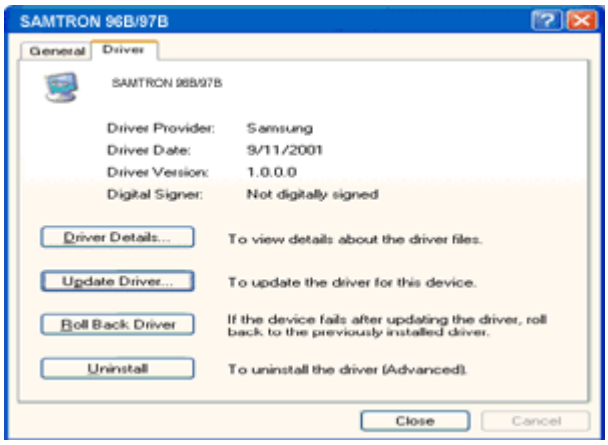

Hardware Installation
The software you are installing for this hardware:
SAMTRON 96B/97B
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

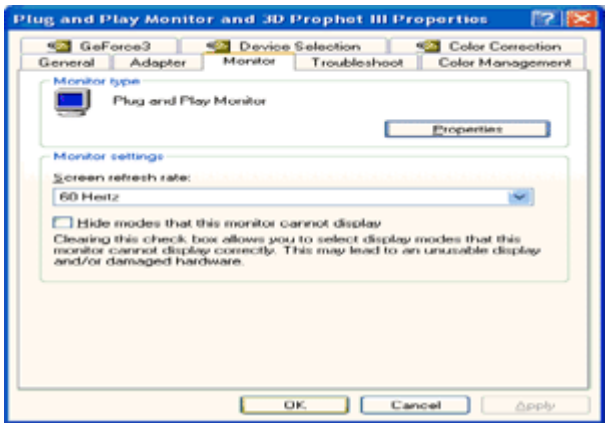
This monitor driver is under certifying MS logo,and this installation don't damage your system.The certified driver will be posted on Samtron Monitor Homepage.
http://www.samtron.com/

9. Click the "**Close**" button then click "**OK**" button continually.

Setup

Installing the Video Driver





10. Monitor driver installation is completed.

Microsoft® Windows® 2000 Operating System

When you can see "Digital Signature Not Found" on your monitor, follow these steps.

1. Choose "**OK**" button on the "**Insert disk**" window.
2. Click the "**Browse**" button on the "**File Needed**" window.
3. Choose A:(D:\Driver) then click the "Open" button and then click "**OK**" button.

How to install

1. Click "**Start**" , "**Setting**" , "**Control Panel**".
2. Double click the "**Display**" Icon.
3. Choose the "**Settings**" tab and then click "**Advanced..**".
4. Choose "**Monitor**".
   Case1: If the "Properties" button is inactive, it means your monitor is properly configured. Please stop installation
   Case2: If the "Properties" button is active, click the "Properties" button then follow next steps continually.
5. Click "**Driver**" and then click on "**Update Driver..**" then click on the "Next" button.
6. Choose "**Display a list of the known drivers for this device so that I can choose a specific driver**" then click "**Next**" and then click "**Have disk**".
7. Click the "**Browse**" button then choose A:(D:\Driver).
8. Click the "**Open**" button, then click "**OK**" button.
9. Choose your monitor model and click the "**Next**" button then click "**Next**" button.
10. Click the "**Finish**" button then the "**Close**" button.

If you can see the "**Digital Signature Not Found**" window then click the "**Yes**"button. And click the "**Finish**" button then the "**Close**" button.

Setup

Installing the Video Driver

Microsoft® Windows® Millennium Operating System

1. Click "**Start**" , "**Setting**" , "**Control Panel**".
2. Double click "**Display**" icon.
3. Select the "**Settings**" tab and click "**Advanced Properties**" button.
4. Select the "**Monitor**" tab.
5. Click the "**Change**" button in the "**Monitor Type**" area.
6. Choose "**Specify the location of the driver**".
7. Choose "**Display a list of all the driver in a specific location..**" then click "**Next**" button.
8. Click the "**Have Disk**" button
9. Specify A:\(D:\driver) then click "**OK**" button.
10. Select "**Show all devices**" and choose the monitor that corresponds to the one you connected to your computer and click "**OK**".
11. Continue choosing "**Close**" button and "**OK**" button until you close the Display Properties dialogue box. (You can get some other screen for warning message or others, then click the appreciate option for your monitor.)

Microsoft® Windows® 98 Operating System

1. Click "**Start**" , "**Setting**" , "**Control Panel**".
2. Double click "**Display**" icon.
3. Select the "**Settings**" tab and click "**Advanced Properties**" button.
4. Select the "**Monitor**" tab.
5. Click the "**Change**" button in the "**Monitor Type**" area then click "**Next**" button.
6. Choose "**Display a list of all the driver..**" then click "**Next**" button.
7. Click the "**Have Disk**" button, then click "**browse..**" button.
8. Specify A:\(D:\driver) then click "**OK**" button.
9. The "**Select Device**" dialogue box will appear. Select "**Show all devices**" then choose the monitor that corresponds to the one you connected to your computer and click OK.
10. Continue choosing "**Close**" button and "**O.K**" button until you close the Display Properties dialogue box.

Microsoft® Windows® 95 Operating System

First determine the Windows 95 version installed on your computer by right-clicking the My Computer icon on PC and selecting Properties. The version number is listed under System. Perform the steps for the appropriate version.

Version 4.00.950A

1. Click **Start**, **Settings**, **Control Panel**, and then double-click "**Display**" icon.
2. In the "**Display Properties**" window, click the "**Settings**" tab and click "**Change Display Type**".
3. In the "**Change Display Type**" window, click "**Change**" and then click "**Have Disk**".
4. Click "**browse..**" button and specify A:\(D:\driver) and click "**OK**".
5. In the Select Device window, click the appropriate monitor model and then click OK.
6. Continue choosing "**Close**" button and "**OK**" button until you close the "**Display Properties**" dialogue box.

Setup

Installing the Video Driver

Version 4.00.950B

1. Click **Start**, **Settings**, **Control Panel**, and then double-click "**Display**" icon.
2. In the "**Display Properties**" window, click the Settings tab and then click "**Advanced Properties**" button.
3. In the "**Advanced Display Properties**" window, click the "**Monitor**" tab and then click "**Change**" button.
4. In the "**Select Device**" window, click "**Have Disk**" button.
5. Click "**browse..**" button and specify A:\(D:\driver) and click "**OK**".
6. In the "**Select Device**" window, click the appropriate monitor model and then click "**OK**".
7. Continue choosing "**Close**" button and "**OK**" button until you close the "**Display Properties**" dialogue box.

Microsoft® Windows® NT Operating System

1. Click **Start**, **Settings**, **Control Panel**, and then double-click **Display** icon.
2. In Display Registration Information window, click Settings Tab and then click **All Display Modes**.
3. Select a mode that you wish to use (Resolution, Number of colors and Vertical frequency) and then click **OK**.
4. Click **Apply** button if you see the screen working normally after clicking Test. If the screen is not normal, change to a different mode (lower mode of resolution, colors or frequency).

Note: If there is no Mode at **All Display Modes**, select the level of resolution and vertical frequency by referring to the Preset Display Modes

Linux Operating System

To execute X-Window, you need to make the X86Config file, which is a type of system setting file.

1. Press Enter at the first and the second screen after executing the X86Config file.
2. The third screen is for **setting your mouse**.
3. Set a mouse for your computer.
4. The next screen is for **selecting a keyboard**.
5. Set a Keyboard for your computer.
6. The next screen is for **setting your monitor**.
7. First of all, set a **horizontal frequency** for your monitor. (You can enter the frequency directly.)
8. Set a **vertical frequency** for your monitor. (You can enter the frequency directly.)
9. Enter the **model name of your monitor**. This information will not affect the actual execution of X-Window.
10. You have **finished** setting up your monitor.
    Execute X-Window after setting other requested hardware.

Setup

Tilt/Swivel Base Installation

1. Tilt/Swivel Base

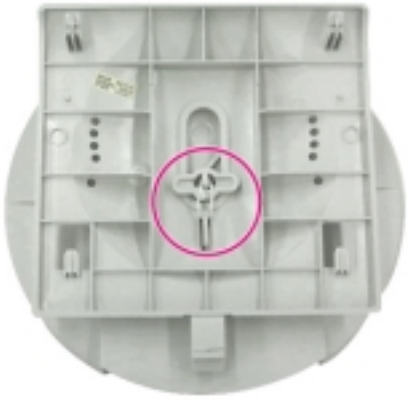
With the built-in pedestal, you can tilt and/or swivel the monitor for the most comfortable viewing angle.

Note: The base is detachable. Your monitor is shipped with the base detached.

Setup

2. Attaching the Base

If your monitor was supplied with the base detached, attach the base as follows.



Remove the twist-tie before attaching the base to the monitor

1. Place the monitor upside-down on a flat work surface.

2. Align the tabs on the base with the corresponding slots on the bottom of the monitor.

3. Press the base onto the monitor until the tabs are fully engaged in the slots.

4. Push the base toward the front of the monitor until the release latch clicks into the locked position.

Note: The Base will align with the monitor slots in only one position.

Setup

3. Removing the Base

1. Turn off the monitor and unplug it from the electrical outlet.
2. Place the monitor upside down on a stable, flat work surface.
3. Squeeze and pull up on the release latch on the base.
4. Push the base toward the back of the monitor and lift up to remove the base.

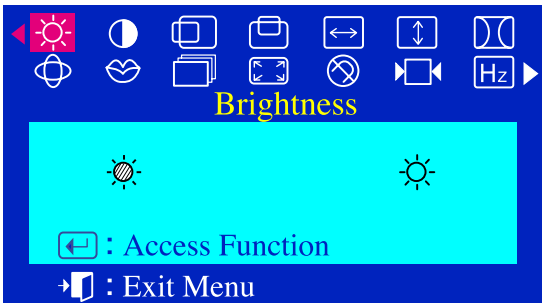
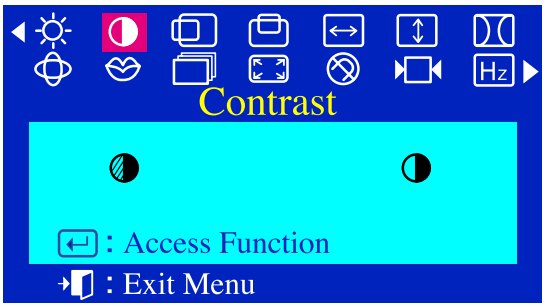
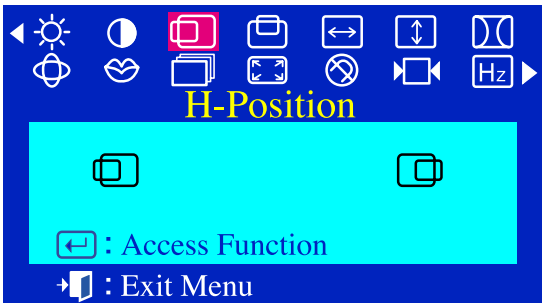
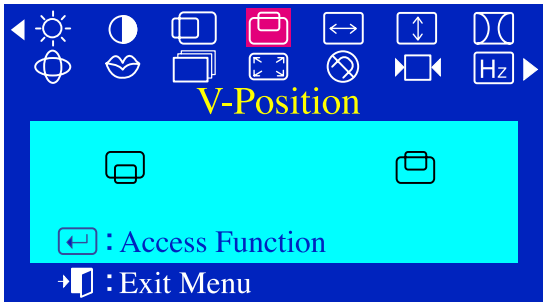
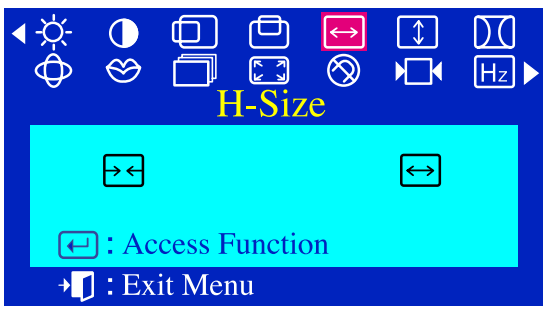
On Screen Display (OSD) Menu System

1 Use this button to open the OSD and activate a highlighted menu item.

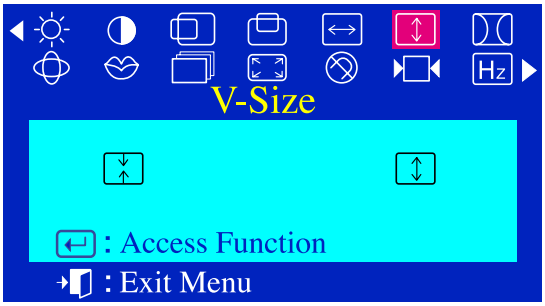
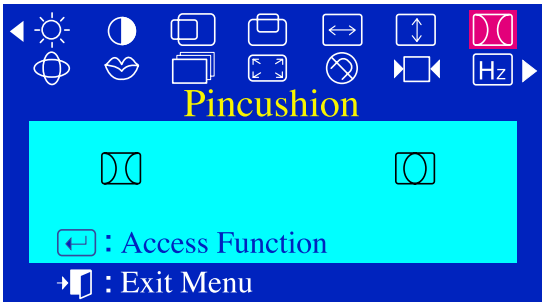
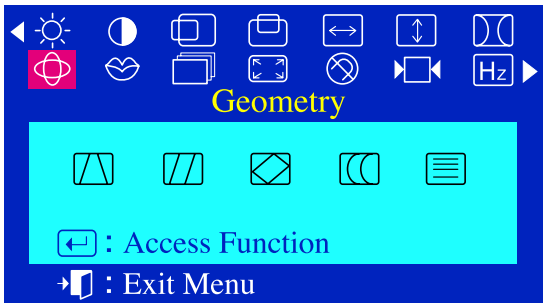
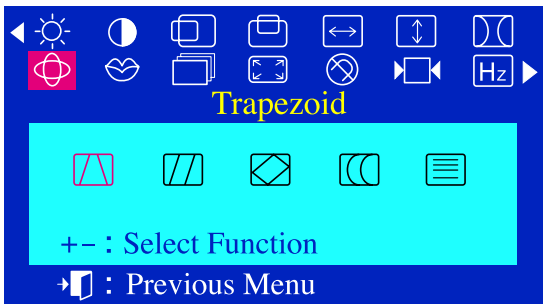
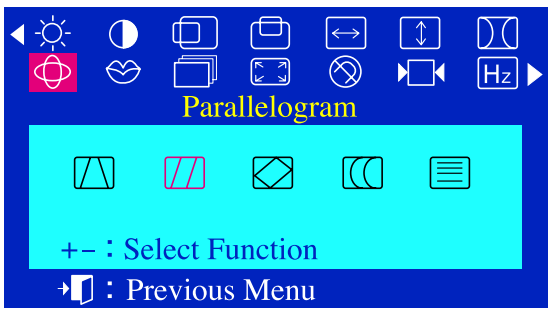
2.3 Use these buttons to highlight and adjust items using the On-Screen Display. These buttons are also direct access buttons for the contrast and brightness feature.

4 Use this button to Exit the active menu or the OSD.

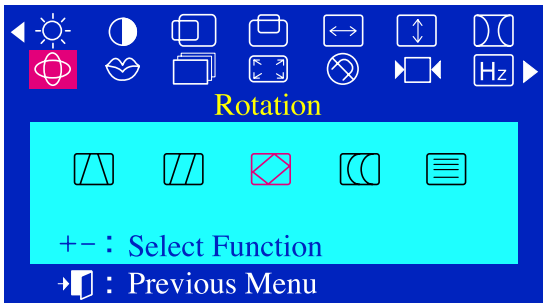
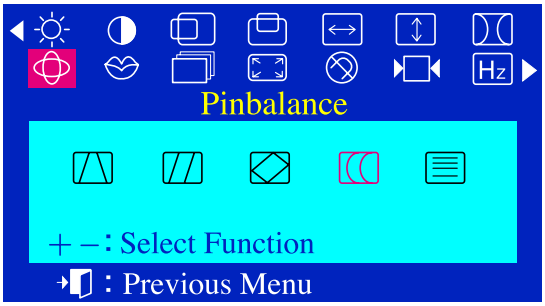
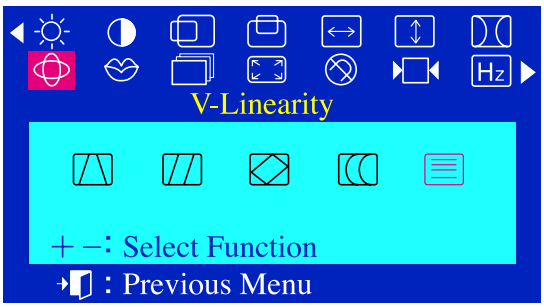
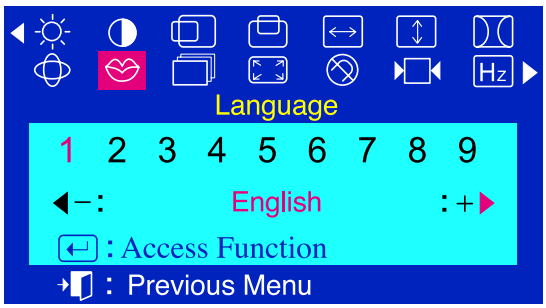
On Screen Display (OSD) Menu System

Menu	How to adjust
	Brightness : Background brightness of screen. – Decreases brightness + Increases brightness
	Contrast : Contrast of screen image. – Decreases contrast + Increases contrast
	Horizontal Position : Horizontal screen position. – Moves screen left + Moves screen right
	Vertical Position : Vertical screen position. – Moves screen down + Moves screen up
	Horizontal Size : Horizontal screen size. – Decreases size + Increases size

On Screen Display (OSD) Menu System

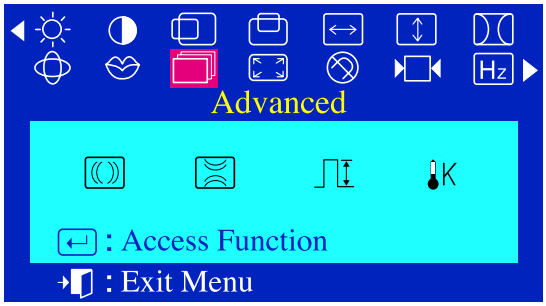
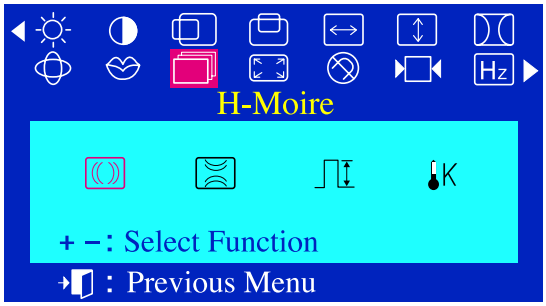
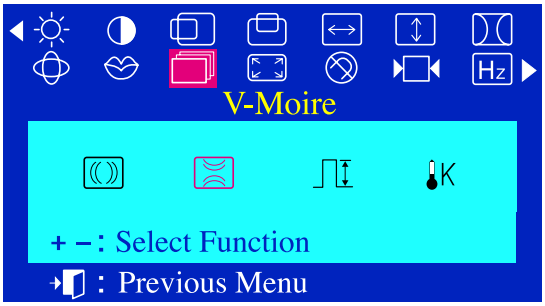
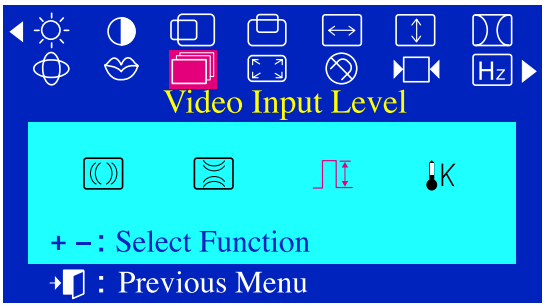
Menu	How to adjust
	Vertical Size : Vertical screen size. – Decreases size + Increases size
	Pincushion : Straightens screen vertical edges. – Curves image inward + Curves image outward
	Geometry : Adjust the Trapezoid, Parallelogram, Rotation, Pinbalance, V-Linearity of the screen image.
	Trapezoid : Width of top and bottom of screen. – Widens bottom of screen + Widens top of screen
	Parallelogram – Skews screen image left + Skews screen image right

On Screen Display (OSD) Menu System

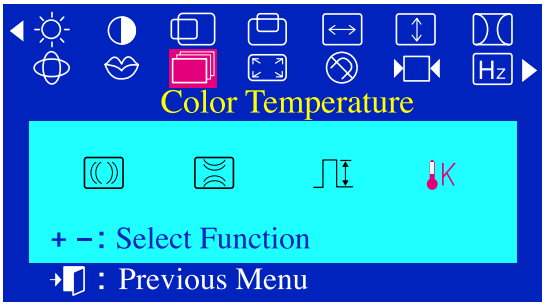
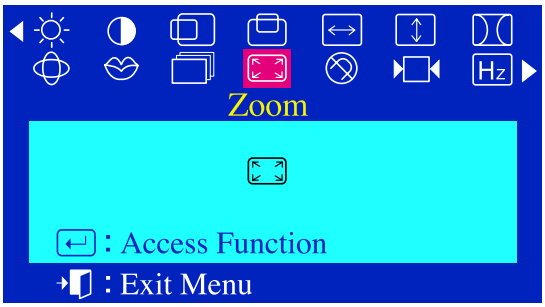
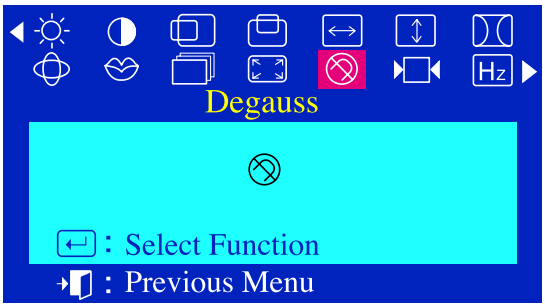
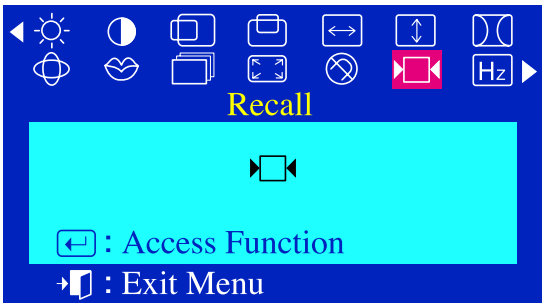
Menu	How to adjust
	Rotation – Rotates entire screen left + Rotates entire screen right
	Pinbalance – Curves vertical lines to left + Curves vertical lines to right
	V-Linearity – Compresses image at top of screen + Compresses image at bottom of screen
	Language : – and + scroll through on-screen language options. (English/ Deutsch/ Francais/ Italiano/Português/ Español/ Svenska/ Russian/Korean)

Note: The language chosen affects only the language of the OSD. It has no effect on any software running on the computer.

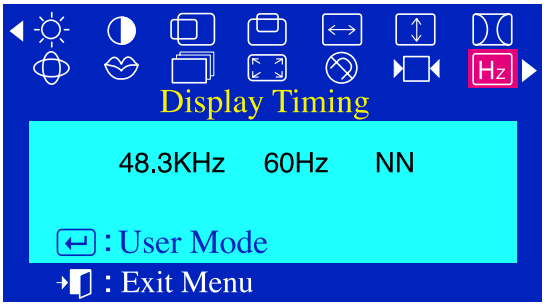
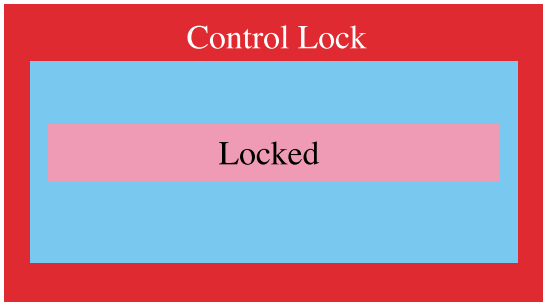
On Screen Display (OSD) Menu System

Menu	How to adjust
	Advanced
	H-Moire : Corrects for on-screen moiré pattern. – and + clear horizontal moiré
	V-Moire : Corrects for on-screen moiré pattern. – and + clear vertical moiré
	Video Input Level : Selects the video signal level. – Select 0.7 V + Select 1.0 V

On Screen Display (OSD) Menu System

Menu	How to adjust
	Color Temperature – 9300k more blue + 6500k more red
	Zoom – Reduces view of display area + Enlarges view of display area
	Degauss : Removes color distortion caused by magnetic fields. Do not use more than once in 30 minutes.
	Recall : Returns monitor to original settings. - No + Yes

On Screen Display (OSD) Menu System

Menu	How to adjust
	Display Timing : Monitor display settings. – Factory timing + User timing
	OSD Lock/Unlock : Allows you to secure the current control settings so that they cannot be inadvertently changed. You can unlock the OSD controls at any time by using the same procedure. ■ Push and hold in the Menu button for 10 seconds or more to Lock or to Unlock.

Troubleshooting

Chek List

Note : Before calling for service, check the information in this section to see if you can solve the problem yourself. If you do need assistance, please call the phone number on the warranty card, the phone number on the Information section or contact your dealer.

Symptom	Chek List	Solution
No Images on the screen. I cannot trun on the monitor. 	Is the power cord connected properly?	Check the power cord connection and supply.
	Can you see "No Connection, Check Signal Cable" on the screen?	Check the signal cable connection.
	If the power is on, reboot the computer to see the initial screen(the login screen), which can be seen.	● If the initial screen (the login screen) appears, boot the computer in the applicable mode (the safe mode for Windows 98/95) and then change the frequency of the video card.(Refer to the Preset Display Modes) ● Note: If the initial screen (the login screen) does not appear, contact a service center or your dealer.
	Can you see "Sync. Out of Range" on the screen?	● You can see this message when the signal from the video card exceeds the maximum resolution and frequency that the monitor can properly handle. ● Adjust the maximum resolution and frequency applicable to the monitor.
	There is no image on the screen.Is the power indicator on the monitor blinking at 1 second intervals?	● The monitor is in PowerSave mode. ● Press a key on the keyboard or move the mouse to activate the monitor and restore the image on the screen.
I cannot see the On Screen Display(OSD). 	Have you locked the On Screen Display (OSD) Menu to prevent changes?	● Unlock the OSD by pressing the MENU button for at least 10 seconds.

Troubleshooting

Symptom	Chek List	Solution
The image on the screen is shaking.	Check the monitor configuration to see if it is in Interlace Mode. (Interlace Mode: Vertical frequency 43Hz, 87Hz(i), etc)	● The signal from the video card exceeds the maximum resolution and frequency of the monitor.
	Are there any magnetic products such as a high voltage wire near by?	● Move the monitor away from anything that can create a strong magnetic field.
	Is the voltage stable?	● The screen image can appear to shake or vibrate at a particular time of day due to low supply voltage.
	The screen image can also appear to shake or vibrate if there is a problem with the video card or the computer's main board.	
The screen shows strange colors or just black and white.	Is the screen displaying only one color as if looking at the screen through a cellophane paper?	● Check the signal cable connection. ● Make sure the video card is fully inserted in it's slot.
	Have the screen colors become strange after running a program or due to a crash between applications?	● Reboot the computer.
	Has the video card been set properly?	● Set the video card by referring to the video card manual.
The screen suddenly has become unbalanced.	Have you changed the video card or the driver?	● Adjust screen image position and size using the OSD.
	Have you adjusted the resolution or frequency to the monitor?	● Adjust the resolution and frequency at the video card. (Refer to the Preset Display Modes)
	The screen can be unbalanced due to the cycle of the video card signals. Readjust Position by referring to the OSD.	
The screen is out of focus or OSD cannot be adjusted.	Have you adjusted the resolution or frequency on the monitor?	● Adjust the resolution and frequency of the video card. (Refer to the Preset Display Modes)

Troubleshooting

Symptom	Chek List	Solution
The screen is partialy distorted. 	Are there any magnetic products such as an adapter, speaker or a high voltage wire near the monitor?	● Enter the OSD and perform a 'Degauss'. ● Keep the monitor away from any magnetic products.
LED is blinking but no images on the screen. 	Is the frequency properly adjusted when checking the Display Timing on the menu?	● Adjust the frequency properly by referring to the video card manual and the Preset Display Modes. (The maximum frequency per resolution may differ from product to product.)
There are only 16 colors shown on the screen. The screen colors have changed after changing the video card.	Have the Windows colors been set properly?	● For Windows 98(95): Set the colors properly at the Control Panel, Display, Settings. ● For Windows 3.1: Adjust the colors of the screen using the VGA utility provided by the video card.
	Has the video card been set properly?	● Set the video card by referring to the video card manual.
There is a message that reads "Unrecognized monitor, Plug & Play (VESA DDC) monitor found".	Have you installed the monitor driver?	● Install the monitor driver according to the Driver Installation Instructions.
	See the video card manual to see if the Plug & Play (VESA DDC) function can be supported.	● Install the monitor driver according to the Driver Installation Instructions.

Troubleshooting

Check the following items if there is trouble with the monitor.

1. Check if the power cord and the cable are properly connected to the computer.
2. Check if the computer beeps more than 3 times when booting.
   (If it does, request an after-service for the main board of the computer.)
3. If you installed a new video card or if you assembled the PC, check if the installed the adapter (video) driver and the monitor driver.
4. Check if the scanning ratio of the video screen is set at 75Hz or 85Hz.
   (Do not exceed 60Hz when using the maximum resolution.)
5. If you have problems in installing the adapter (video) driver, boot the computer in Safe Mode, remove the Display Adapter at "the Control Panel, System, Device Administrator" and then reboot the computer to reinstall the adapter (video) driver.

Note:If problems repeatedly occur, contact an authorized service center.

Troubleshooting

Q & A

Question	Answer
How can I change the frequency?	Frequency can be changed by reconfiguring the video card. Note that video card support can vary, depending on the version of the driver used. (Refer to the computer or the video card manual fordetails.)
How can I adjust the resolution?	Windows 95/98: Set the resolution at the Control Panel, Display, Settings. Windows 3.1: Change the resolution and the colors using the VGA Utility provided by the video card. * Contact the video card manufacturer for details.
How can I set the Power Saving function?	Windows 95/98: Set the function at BIOS-SETUP of the computer or the screen saver. (Refer to Windows/Computer Manual) Windows 3.1: Set the function using the VGA Utility provided by the video card.
The monitor makes a sound when it is turned on.	This is normal as some sound may be generated when the metal case and the electromagnet, which are installed to block any electromagnetic waves, interact with each other.
How can I clean the outer case/Picture tube?	Disconnect the power cord and then clean the monitor with a soft cloth, using either a plain water. Do not leave any remains of the detergent nor scratch the case. Do not allow any water to go inside the monitor.

Troubleshooting

Self-Test Feature Check

A self-test feature is provided that allows you to check for proper monitor function. If your monitor and computer are properly connected but the monitor screen remains dark and the power indicator is blinking, run the monitor self-test by performing the following steps:

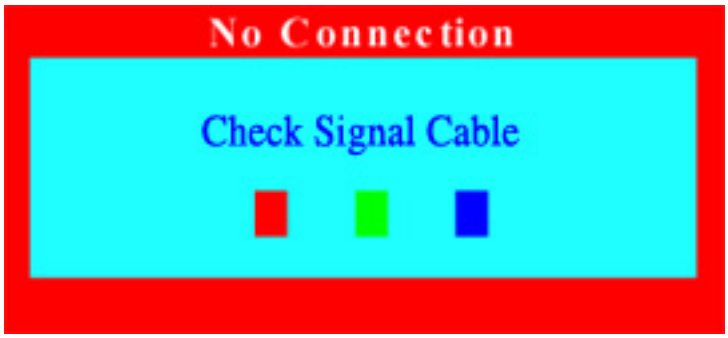
Self-Test Feature Check

1. Turn off both your computer and the monitor.

2. Unplug the video cable from the back of the computer.

3. Turn on the monitor.

If your monitor is functioning properly, you will see a box with a red border and blue text inside as shown in the following illustration:
The three boxes inside the border are red, green and blue.



Failure of any of the boxes to appear indicates a problem with your monitor. This box also appears during normal operation if the video cable becomes disconnected or damaged.

4. Turn off your monitor and reconnect the video cable; then turn on both your computer and the monitor.

If your monitor screen remains blank after using the previous procedure, check your video controller and computer system; your monitor is functioning properly.

Troubleshooting

Self-Test Feature Check

Warning Messages

If there is something wrong with the input signal, a message appears on the screen or the screen goes blank although the power indicator LED is still on. The message may indicate that the monitor is out of scan range or that you need to check the signal cable.

Environment

The location and the position of the monitor may influence the quality and other features of the monitor.

1. If there are any woofer speakers near the monitor, unplug and relocate the woofer to another room.
2. Remove all electronic devices such as radios, fans, clocks and telephones that are within 3 feet (one meter) of the monitor.
3. Degauss the monitor if any devices were removed from the area.

Userful Tip

- A monitor recreates visual signals received from the PC. Therefore, if there is trouble with the PC or the video card, this can cause the monitor to become blank, have poor coloring, noise, Sync. Out of Range, etc. In this case, first check the source of the problem, and then contact a service center or your dealer.

- Judging the monitor's working condition

  If there is no image on the screen or an "Sync. Out of Range" message comes up, disconnect the cable from the computer while the monitor is still powered on.
  - ◆ If there is a message coming up on the screen or if the screen goes white, this means the monitor is in working condition.
  - ◆ In this case, check the computer for trouble.

Specifications

General Specifications

General	
Model Name	SAMTRON 76E
Picture Tube	
Type	17" (43cm) Full square type (40.6cm viewable)
Deflection angle	90°
Dot Pitch	0.23 mm(Horizontal)
Screen type	Silica coated with anti-electronic properties (TCO : Multilayer coating)
	Medium-short persistence phosphor.
Maximum Resolution	
1280 Dots, 1024 Lines	
Active Display	
Horizontal	12.3 ± 0.16 inch (312 ± 4 mm)
Vertical	9.2 ± 0.16 inch (234 ± 4 mm)
Synchronization	
Horizontal	30 ~ 70 kHz
Vertical	50 ~ 160 Hz
Input Signal, Terminated	
Analog	0.7 Vpp positive at 75 ohms
Separate Sync	TTL level, positive or negative
Display Color	
Unlimited	
Maximum Pixel Clock	
110 MHz	
Power Supply	
AC 110 ~ 240V ± 10%, 60Hz/50 Hz ± 3Hz	
Power Consumption	
90W (Maximum), 75W (Nominal)	
Dimensions (WxDxH)	
398 x 412 x 400 mm (with base)	
Weight	
15.0 kg	
Plug and Play Capability	
This monitor can be installed on any Plug & Play compatible system. Interaction of the monitor and computer systems will provide the best operating conditions and monitor settings. In most cases, monitor installation will proceed automatically, unless the user wishes to select alternate settings.	

Specifications

General Specifications

General	
Model Name	SAMTRON 76V
Picture Tube	
Type	17" (43cm) Full square type (40.6cm viewable)
Deflection angle	90°
Dot Pitch	0.23 mm(Horizontal)
Screen type	Medium-short persistence phosphor.
Maximum Resolution	
1280 Dots, 1024 Lines	
Active Display	
Horizontal	12.3 ± 0.16 inch (312 ± 4 mm)
Vertical	9.2 ± 0.16 inch (234 ± 4 mm)
Synchronization	
Horizontal	30 ~ 70 kHz
Vertical	50 ~ 160 Hz
Input Signal, Terminated	
Analog	0.7 Vpp positive at 75 ohms
Separate Sync	TTL level, positive or negative
Display Color	
Unlimited	
Maximum Pixel Clock	
110 MHz	
Power Supply	
AC 100 ~ 240V ± 10%, 60Hz/50 Hz ± 3Hz	
Power Consumption	
90W (Maximum), 75W (Nominal)	
Dimensions (WxDxH)	
398 x 412 x 400 mm	
Weight	
15.0 kg	
Plug and Play Capability	
This monitor can be installed on any Plug & Play compatible system. Interaction of the monitor and computer systems will provide the best operating conditions and monitor settings. In most cases, monitor installation will proceed automatically, unless the user wishes to select alternate settings.	

Specifications

General Specifications

General	
Model Name	SAMTRON 56B
Picture Tube	
Type	15" (38cm) Full square type (35cm viewable)
Deflection angle	90°
Dot Pitch	0.24 mm(Horizontal)
Screen type	Medium-short persistence phosphor.
Maximum Resolution	
1280 Dots, 1024 Lines	
Active Display	
Horizontal	10.5 ± 0.16 inch (267 ± 4 mm)
Vertical	7.9 ± 0.16 inch (200 ± 4 mm)
Synchronization	
Horizontal	30 ~ 70 kHz
Vertical	50 ~ 160 Hz
Input Signal, Terminated	
Analog	0.7 Vpp positive at 75 ohms
Separate Sync	TTL level, positive or negative
Display Color	
Unlimited	
Maximum Pixel Clock	
110 MHz	
Power Supply	
AC 100 ~ 240V ± 10%, 60Hz/50 Hz ± 3Hz	
Power Consumption	
75 W (Maximun), 65W (Nominal)	
Dimensions (WxDxH)	
356 x 379 x 369.5 mm (with Base)	
Weight	
11.5 kg	
Plug and Play Capability	
This monitor can be installed on any Plug & Play compatible system. Interaction of the monitor and computer systems will provide the best operating conditions and monitor settings. In most cases, monitor installation will proceed automatically, unless the user wishes to select alternate settings.	

Specifications

Preset Display Modes

If the signal transferred from the computer is the same as the following Preset Display Modes, the screen will be adjusted automatically. However, if the signal differs, the screen may go blank while the power LED is on. Refer to the video card manual and adjust the screen as follows.

Display Mode	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (H/V)
IBM, 640 x 480	31.469	59.940	25.175	-/-
IBM, 720 x 400	31.469	70.087	28.322	-/+
VESA, 640 X 480	37.500	75.000	31.500	-/-
VESA, 640 X 480	43.269	85.008	36.000	-/-
VESA, 800 X 600	46.875	75.000	49.500	+/+
VESA, 800 X 600	53.674	85.061	56.250	+/+
VESA, 1024 X 768	60.023	75.029	78.750	+/+
VESA, 1024 X 768	68.677	84.997	94.500	+/+

Horizontal Frequency

The time to scan one line connecting the right edge to the left edge of the screen horizontally is called Horizontal Cycle and the inverse number of the Horizontal Cycle is called Horizontal Frequency.
Unit: kHz

Vertical Frequency

Like a fluorescent lamp, the screen has to repeat the same image many times per second to display an image to the user. The frequency of this repetition is called Vertical Frequency or Refresh Rate.
Unit: Hz

Specifications

PowerSaver

This monitor has a built-in power management system called PowerSaver. This system saves energy by switching your monitor into a low-power mode when it has not been used for a certain amount of time. The monitor automatically returns to normal operation when you move the computer's mouse or press a key on the keyboard. For energy conservation, turn your monitor OFF when it is not needed, or when leaving it unattended for long periods. The PowerSaver system operates with a VESA DPMS compliant video card installed in your computer. Use a software utility installed on your computer to set up this feature.

SAMTRON 76E / 76V

State	Normal Operation	Power-off Mode EPA/ENERGY 2000
Power Indicator	Green	Green, Blinking (1 sec. interval)
Power Consumption	75W(Nominal) 90W(Maximum)	Less than 3W

SAMTRON 56B

State	Normal Operation	Power-off Mode EPA/ENERGY 2000
Power Indicator	Green	Green, Blinking (1 sec. interval)
Power Consumption	65W(Nominal) 75W(Maximum)	Less than 3W

This monitor is EPA ENERGY STAR® compliant and ENERGY2000 compliant when used with a computer equipped with VESA DPMS functionality.
As an ENERGY STAR® Partner, SAMSUNG has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

Information

Service

● **SAMTRON SEOUL**
15TH FL, JOONGANG DAILY NEWS BLDG. 7, SOONHWA-DONG,CHUNG-KU,
SEOUL, KOREA, 100-759
TEL : (82-2) 727-3114

● **SAMTRON U.S.A**
SAMTRON COMPUTER PRODUCTS CUSTOMER SERVICE
400 Valley Road Suite 201, Mt. Arlington, NJ 07856
TEL : 973-601-6200, FAX : 973-601-6001
1-800-SAMTRON (1-800-726-8766)

● **SAMTRON CANADA**
SAMSUNG ELECTRONICS CANADA INC.
7037 FINANCIAL DRIVE
MISSISSAUGA, ONTARIO L5N 6R3
TEL : 1-800-726-7864
FAX : 905-542-1199

● **SAMTRON EUROPE**
SAMSUNG ELECTRONICS GMBH
SAMSUNG-HAUS, AM KRONBERGER HANG 6
65824 SCHWALBACH/TS., GERMANY
TEL : 49 (0180) 5121213*
FAX : 49 (0180) 5121214*
*DM 0,24/MIN

● **SAMTRON TOKYO**
17TH, HAMACHO CENTER BLDG. 2-31-1, NIHONBASHI-HAMACHO,
CHOU-KU, TOKYO 103, JAPAN
TEL : (81-3) 5641-9860 FAX : (81-3) 5641-9861

● **SAMTRON SWEDEN**
SAMSUNG ELECTRONICS SYENSKA, AB
BOX 713, S- 194 27 UPPLANDS VASBY
TEL : 468- 590- 966- 00 FAX : 468- 590- 966- 50

● **SAMTRON MEXICO**
SAMSUNG ELECTRONICS MEXICO, S.A. DE C. V. Mina No. 200,
ESQ. GAVILANCOL. GUADALUPE DEL MORAL IZTAPALAPA,
MEXICO, D.F. C.P. 09300
TEL. : (525) 686-0800
FAX : (525) 686-5094

IMPORTADO POR : SAMSUNG ELECTRONICS MEXICO S.A. DE C.V.
SATURNO 44 COL. NVA. INDUSTRIAL VALLEJO
DEL. GUSTAVO A. MADERO C.P. 07700
MEXICO D.F. TEL. 5747-5100
RFC: SEM950215S98

EXPORTADO POR: SAMSUNG ELECTRONICS CO.,LTD.
JOONG-ANG DAILY NEWS BLDG.
7 SOON-WHA-DONG CHUNG-KU,
C.P.O BOX 2775, 1144 SEOUL, KOREA

Information

Terms

● Dot Pitch

The image on a monitor is composed of red, green and blue dots. The closer the dots, the higher the resolution. The distance between two dots of the same color is called the 'Dot Pitch'. Unit: mm

● Vertical Frequency

The screen must be redrawn several times per second in order to create and display an image for the user. The frequency of this repetition per second is called Vertical Frequency or Refresh Rate. Unit: Hz

Example: If the same light repeats itself 60 times per second, this is regarded as 60 Hz. In this case, flickering of the screen can be detected. To avoid this problem, there is a Flicker-free Mode using a vertical frequency over 70 Hz.

● Horizontal Frequency

The time to scan one line connecting the right edge to the left edge of the screen horizontally is called Horizontal Cycle. The inverse number of the Horizontal Cycle is called Horizontal Frequency. Unit: KHz

● Interlace and Non-Interlace Methods

Showing the horizontal lines of the screen from the top to the bottom in order is called the Non-Interlace method while showing odd lines and then even lines in turn is called the Interlace method. The Non-Interlace method is used for the majority of monitors to ensure a clear image. The Interlace method is the same as that used in TVs.

● Plug & Play

This is a function that provides the best quality screen for the user by allowing the computer and the monitor to exchange information automatically. This monitor follows the international standard VESA DDC for the Plug & Play function.

● Resolution

The number of horizontal and vertical dots used to compose the screen image is called 'resolution'. This number shows the accuracy of the display. High resolution is good for performing multiple tasks as more image information can be shown on the screen.

Example: If the resolution is 1024 X 768, this means the screen is composed of 1024 horizontal dots (horizontal resolution) and 768 vertical lines (vertical resolution).

Information

Regulatory

FCC Information | IC Compliance Notice | MPR II Compliance |
European Notice (Europe only) | PCT Notice |
TCO'95-Ecological requirements for personal computers (TCO applied model only) |
TCO'99-Ecological requirements for personal computers (TCO applied model only)

● FCC Information

User Instructions
The Federal Communications Commission Radio Frequency Interference Statement includes the following warning:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television receptions, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

User Information
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. If necessary, consult your dealer or an experienced radio/television technician for additional suggestions. You may find the booklet called How to Identify and Resolve Radio/TV Interference Problems helpful. This booklet was prepared by the Federal Communications Commission. It is available from the U.S. Government Printing Office, Washington, DC 20402, Stock Number 004-000-00345-4.

Warning
User must use shielded signal interface cables to maintain FCC compliance for the product.

Declaration of conformity for products Marked with FCC Logo
This device complies with Part 15 of the FCC Rules.Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
The party responsible for product compliance:
SAMSUNG ELECTRONICS CO., LTD
America QA Lab of Samsung
85 West Tasman Drive
San Jose, CA 95134 USA
Tel) 408-544-5124
Fax) 408-544-5191

Information

Provided with this monitor is a detachable power supply cord with IEC320 style terminations. It may be suitable for connection to any UL Listed personal computer with similar configuration. Before making the connection, make sure the voltage rating of the computer convenience outlet is the same as the monitor and that the ampere rating of the computer convenience outlet is equal to or exceeds the monitor voltage rating.
For 120 Volt applications, use only UL Listed detachable power cord with NEMA configuration 5-15P type (parallel blades) plug cap. For 240 Volt applications use only UL Listed Detachable power supply cord with NEMA configuration 6-15P type (tandem blades) plug cap.

● IC Compliance Notice

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations of ICES-003.

Cet appareil Numérique de classe B respecte toutes les exigences du Règlemont ICES-003 sur les équipements produisant des interférences au Canada.

● MPR II Compliance

This monitor complies with SWEDAC(MPR II) recommendations for reduced electric and magnetic fields.

● European Notice (Europe only)

Products with the CE Marking comply with both the EMC Directive (89/336/EEC), (92/31/EEC), (93/68/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community. Compliance with these directives implies conformity to the following European Norms:

- EN55022:1998 - Radio Frequency Interference
- EN55024:1998 - Electromagnetic Immunity
- EN61000-3-2:1995+A1+A2 - Power Line Harmonics
- EN61000-3-3:1995 - Voltage Fluctuations
- EN60950 - Product Safety.

● PCT Notice

PCT

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Information

● TCO'95-Ecological requirements for personal computers (TCO applied model only)

AB general requirements
AB2 Written Eco-document acompanying the products
Congratulations! You have just purchased a TCO'95 approved and labelled product! Your choice has provided you with a product developed for professional use. Your purchase has also contributed to reducing the burden on the environment and to the further development of environmentally- adapted electronic products.

Why do we have environmentally-labelled monitors?
In many countries, environmental labelling has become an established method for encouraging the adaptation of goods and services to the environment.The main problem as far as monitors and other electronic equipment are concerned is that environmentally harmful substances are used both in the products and during their manufacture. Since it has not been possible so far for the majority of electronic equipment to be recycled in a satisfactory way, most of these potentially damaging substances sooner or later enter Nature.

There are also other characteristics of a monitor, such as energy consumption levels, that are important from both the working and natural environment viewpoints.Since all types of conventional electricity generation have a negative effect on the environment (acidic and climate-influencing emissions, radioactive waste, etc.) it is vital to conserve energy. Electronic equipment in offices consumes an enormous amount of energy, since it is often routinely left running continuously.

What does labelling involve?
This product meets the requirements for the TCO'95 scheme, which provides for international environmental labelling of monitors. The labelling scheme was developed as a joint effort by the TCO (The Swedish Confederation of Professional Employees), Naturskyddsforeningen (The Swedish Society for Nature Conservation) and NUTEK (The National Board for Industrial and Technical Development in Sweden).

The requirements cover a wide range of issues: environment, ergonomics, usability, emission of electrical and magnetic fields, energy consumption and electrical and fire safety.

The environmental demands concern among other things restrictions on the presence and use of heavy metals, brominated and chlorinated flame retardants, CFCs (freons), and chlorinated solvents. The product must be prepared for recycling and the manufacturer is obliged to have an environmental plan, which must be adhered to in each country where the company conducts its operations policy. The energy requirements include a demand that the monitor after a certain period of inactivity shall reduce its power consumption to a lower level, in one or more stages. The length of time to reactivate the monitor shall be reasonable for the user.

Labelled products must meet strict environmental demands, for example in respect of the reduction of electric and magnetic fields, along with physical and visual ergonomics and good usability.

TCO Development Unit 1996-11-29
On the page this folder you will find a brief summary of the environmental requirements met by this product.
The complere environmental criteria document may be ordered from:
TCO Development Unit
S-11494 Stockholm
Sweden
Fax: +46 8 782 92 07
E-mail (Internet): development@tco.se
Current information regarding TCO'95-approved and labelled products may also
be obtained via the Internet, using the address:
http://www.tco-info.com/
TCO'95 is a co-operative project between(3 logos)

Information

Environmental Requirements
Brominated flame retardants are present in printed circuit boards, cables, wires, casings and housings. In turn, they delay the spread of fire. Up to thirty percent of the plastic in a computer casing can consist of flame retardant substances. These are related to another group of environmental toxins, PCBs, which are suspected to give rise to similar harm, including reproductive damage in fish eating birds and mammals, due to the bioaccumulative processes. Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.

● TCO'95 demand requires that plastic components weighing more than 25 grams must not contain organically bound chlorine and bromine.

Lead
Lead can be found in picture tubes, display screens, solders and capacitors. Lead damages the nervous system and in higher doses, causes lead poisoning.

● TCO'95 requirement Permits the inclusion of lead since no replacement has yet been developed.

Cadmium
Cadmium is present in rechargeable batteries and in the colour generating layers of certain computer displays. Cadmium damages the nervous system and is toxic in high doses.

● TCO'95 requirement states that batteries may not contain more than 25 ppm (parts per million) of cadmium.
The colour-generating layers of display screens must not contain any cadmium.

Mercury
Mercury is sometimes found in batteries, relays and switches. Mercury damages the nervous system and is toxic in high doses.

● TCO'95 requirement states that batteries may not contain more than 25 ppm (parts per million) of mercury.
It also demands that no mercury is present in any of the electrical or electronics components concerned with the display unit.

CFCs (freons)
CFCs (freons) are sometimes used for washing printed circuit boards and in the manufacturing of expanded foam for packaging. CFCs break down ozone and thereby damage the ozone layer in the stratosphere, causing increased reception on Earth of ultraviolet light with consequent increased risks of skin cancer (malignant melanoma).

● The relevant TCO'95 requirement: Neither CFCs nor HCFCs may be used during the manufacturing of the product or its packaging.

● TCO'99-Ecological requirements for personal computers (TCO applied model only)

Congratulations!
You have just purchased a TCO'99 approved and labelled product! Your choice has provided you with a product developed for professional use. Your purchase has also contributed to reducing the burden on the environment and also to the further development of environmentally adapted electronics products.

This product meets the requirements for the TCO'99 scheme which provides for an international environmental and quality labelling labelling of personal computers. The labelling scheme was developed as a joint effort by the TCO(The Swedish Confederation of Professional Employees), Svenska Naturskyddsforeningen(The Swedish Society for Nature Conservation), Statens Energimyndighet(The Swedish National Energy Administration) and SEMKO AB.

Information

The requirements cover a wide range of issuse: environment, ergonomics, usability, reduction of electric and magnetic fields, energy consumption and electrical safet

Why do we have environmentally labelled computers?
In many countries, environmental labelling has become an established method for encouraging the adaptation of goods and services to the environment. The main problem, as far as computers and other electronics equipment are concerned, is that environmentally harmful substances are used both in the products and during their manufacture. Since it is not so far possible to satisfactorily recycle the majority of electronics equipment, most of these potentially damaging substances sooner or later enter nature.

There are also other characteristics of a computer, such as energy consumption levels, that are important from the viewpoints of both the work (internal) and natural (external) environments. Since all methods of electricity generation have a negative effect on the environment (e.g. acidic and climate-influencing emissions, radioactive waste), it is vital to save energy. Electronics equipment in offices is often left running continuously and thereby consumes a lot of energy.

What does labelling involve?
The environmental demands has been developed by Svenska Naturskyddsforeningen (The Swedish Society for Nature Conservation). These demands impose restrictions on the presence and use of heavy metals, brominated and chlorinated flame retardants, CFCs(freons)and chlorinated solvents, among other things. The product must be prepared for recycling and the manufacturer is obliged to have an environmental policy which must be adhered to in each country where the company implements its operational policy.

The energy requirements include a demand that the computer and/or display, after a certain period of inactivity, shall reduce its power consumption to a lower level in one or more stages. The length of time to reactivate the computer shall be reasonable for the user.

Below you will find a brief summary of the environmental requirements met by this product. The complete environmental criteria document may be ordered from:

TCO Development
SE-114 94 Stockholm, Sweden
Fax: +46 8 782 92 07
Email (Internet): development@tco.se

Current information regarding TCO'99 approved and labelled products may also be obtained via the Internet, using the address: http://www.tco-info.com/

Environmental requirements
Flame retardants
Flame retardants are present in printed circuit boards, cables, wires, casings and housings. Their purpose is to prevent, or at least to delay the spread of fire. Up to 30% of the plastic in a computer casing can consist of flame retardant substances. Most flame retardants contain bromine or chloride, and those flame retardants are chemically related to another group of environmental toxins, PCBs. Both the flame retardants containing bromine or chloride and the PCBs are suspected of giving rise to severe health effects, including reproductive damage in fish-eating birds and mammals, due to the bio-accumulative* processes. Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.

The relevant TCO'99 demand requires that plastic components weighing more than 25 grams must not contain flame retardants with organically bound bromine or chlorine. Flame retardants are allowed in the printed circuit boards since no substitutes are available.

Cadmium**
Cadmium is present in rechargeable batteries and in the colour-generating layers of certain computer displays. Cadmium damages the nervous system and is toxic in high doses. The relevant TCO'99 requirement states that batteries, the colour-generating layers of display screens and the electrical or electronics components must not contain any cadmium.

Mercury**
Mercury is sometimes found in batteries, relays and switches. It damages the nervous system and is toxic in high doses. The relevant TCO'99 requirement states that batteries may not contain any mercury. It also demands that mercury is not present in any of the electrical or electronics components associated with the labelled unit. There is however one exception. Mercury is, for the time being, permitted in the back light system of flat panel monitors as today there is no commercially available alternative. TCO aims on removing this exception when a Mercury free alternative is available.

Information

CFCs (freons)
The relevant TCO'99 requirement states that neither CFCs nor HCFCs may be used during the manufacture and assembly of the product. CFCs (freons) are sometimes used for washing printed circuit boards. CFCs break down ozone and thereby damage the ozone layer in the stratosphere, causing increased reception on earth of ultraviolet light with e.g. increased risks of skin cancer (malignant melanoma) as a consequence.

Lead**
Lead can be found in picture tubes, display screens, solders and capacitors. Lead damages the nervous system and in higher doses, causes lead poisoning. The relevant TCO'99 requirement permits the inclusion of lead since no replacement has yet been developed.

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* Bio-accumulative is defined as substances which accumulate within living organisms.

** Lead, Cadmium and Mercury are heavy metals which are Bio-accumulative.

Information

Authority

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